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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,325	11/19/2001	Keiichi Senda	2001_1715A	8438
513	7590	02/23/2005	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			NGUYEN, PHU K	
			ART UNIT	PAPER NUMBER
			2673	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/988,325

Applicant(s)

SENDA ET AL.

Examiner

Phu K. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 09 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,10 and 13 is/are rejected.
- 7) ☒ Claim(s) 5,6,8,9,11 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*Phu K. Nguyen*  
PHU K. NGUYEN  
PRIMARY EXAMINER  
GROUP 2400

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 7, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over OBATA (5,335,319) in view of PULLI et al. (6,078,331).

As per claim 1, Obata teaches the claimed "polygon rendering device", comprising: "a partial polygon rendering section for performing a rendering process" (Obata, column 10, lines 38-43), "a plurality of partial image data represents an image of the polygon when combined" (Obata, the original polygon is formed by the combination of the sub-divided triangles; column 3, lines 17-23). It is noted that Obata

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does not explicitly teach “a polygon division section for dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon” as claimed. However, Pulli teaches that “a polygon division section for dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon” is well known in the art (Pulli, the subdivision of a polygon into triangles sharing the vertices of the polygon or the polygon is represented by a combination of triangles; column 14, line 49 to column 15, line 19). Furthermore, Pulli teaches that the render processing is performed without further division of any of the partial polygons (Pulli, the triangles are processed and rendered without further subdivided; column 16, lines 19-32). It would have been obvious to a person of ordinary skill in the art, in view of the teaching of Pulli, to divide a polygon having a large number of apexes into smaller polygons because by dividing a large polygon into smaller uniform triangles, the system will accommodate to process the partial polygons uniformly as triangles and clearly enhance the realistic appearance of the smaller polygons when processed (Pulli, column 2, lines 34-46).

Claim 2 adds into claim 1 “said polygon data includes a set of coordinates for specifying said polygon, an unwanted point elimination section for applying an

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elimination process to said polygon data is further comprised to generate new polygon data from which any unwanted set of coordinates is eliminated, and said polygon division section generates said partial polygon data in accordance with the new polygon data which is obtained by the unwanted point elimination section" which Obata teaches the elimination of the un-wanted triangles in column 6, lines 26-31, lines 51-52, 62-64.

Claim 3 adds into claim 1 "a concave polygon determination section for determining whether or not said polygon data specifies a concave polygon, wherein said polygon division section generates said partial polygon data based on the polygon data which is determined as specifying the concave polygon by said polygon division section" which Obata teaches the division process of concave polygon in column 7, lines 19-32.

Claim 4 adds into claim 1 "said partial polygon rendering section performs a perspective projection transformation process based on the partial polygon data generated by said polygon division section, and generates image data which represents the image of said polygon viewed from a predetermined viewpoint" which Obata does not teach. However, given Pulli's manipulation and projection of polygons (Pulli, column 16, lines 16-19) in a graphic display apparatus, it would have been obvious to a person of ordinary skill in the art to perform a perspective projection on the polygons because the perspective projection provides a realistic appearance of the object formed by the polygons and improves the quality of the display image in three dimensional world.

As per claim 7, Obata teaches the claimed "polygon rendering method", comprising: "a partial polygon rendering section for performing a rendering process" (Obata, column 10, lines 38-43), "a plurality of partial image data represents an image of the polygon when combined" (Obata, the original polygon is formed by the combination of the sub-divided triangles; column 3, lines 17-23). It is noted that Obata does not explicitly teach "a polygon division section for dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon" as claimed. However, Pulli teaches that "a polygon division section for dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon" is well known in the art (Pulli, the subdivision of a polygon into triangles sharing the vertices of the polygon or the polygon is represented by a combination of triangles; column 14, line 49 10 column 15, line 19). Furthermore, Pulli teaches that the render processing is performed without further division of any of the partial polygons (Pulli, the triangles are processed and rendered without further subdivided; column 16, lines 19-32). It would have been obvious to a person of ordinary skill in the art, in view of the teaching of Pulli, to divide a polygon having a large number of apexes into smaller polygons because by dividing a large polygon into smaller uniform triangles, the system will accommodate to process the partial polygons uniformly as triangles and

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clearly enhance the realistic appearance of the smaller polygons when processed (Pulli, column 2, lines 34-46).

As per claim 10, Obata teaches the claimed "polygon rendering program", comprising: "a partial polygon rendering operation for performing a rendering process" (Obata, column 10, lines 38-43), "a plurality of partial image data represents an image of the polygon when combined" (Obata, the original polygon is formed by the combination of the sub-divided triangles; column 3, lines 17-23). It is noted that Obata does not explicitly teach "a polygon division section for dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon" as claimed. However, Pulli teaches that "a polygon division section for dividing, based on polygon data which specifies a polygon to be rendered, the polygon into a plurality of partial polygons such that at least one of the plurality of partial polygons has formed therein, from vertices thereof, a plurality of triangles which respectively share a vertex of the polygon" is well known in the art (Pulli, the subdivision of a polygon into triangles sharing the vertices of the polygon or the polygon is represented by a combination of triangles; column 14, line 49 to column 15, line 19). Furthermore, Pulli teaches that the render processing is performed without further division of any of the partial polygons (Pulli, the triangles are processed and rendered without further subdivided; column 16, lines 19-32). It would have been obvious to a person of ordinary skill in the art, in view

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of the teaching of Pulli, to divide a polygon having a large number of apexes into smaller polygons because by dividing a large polygon into smaller uniform triangles, the system will accommodate to process the partial polygons uniformly as triangles and clearly enhance the realistic appearance of the smaller polygons when processed (Pulli, column 2, lines 34-46).

Claim 13 adds into claim 10 "said polygon rendering program is recorded on a recording medium" which Obata teaches in the control section 11 (figures 9-11, holding sections).

Claims 5-6, 8, 9, and 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

This action has been made NON-FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 - 9796. The examiner can normally be reached on M-F 8:00-4:30.


The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu K. Nguyen  
February 14, 2005

  
**PHU K. NGUYEN**  
**PRIMARY EXAMINER**  
**GROUP 2400**